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MEMORANDUM

CONFIDENTIAL - FOR SETTLEMENT DISCUSSIONS ONLY

TO: All Defendants

FROM: Donald W. Fowler
Samuel P. Moulthrop
Thomas T. Terp

DATE: September 13, 1996

RE: Morton International, Inc. v. A.E. Staley Mfg. Co., et al., Case No. 96-3609(NHP), U.S. District Court, District of New Jersey (Newark)

-- and --

Velsicol Chemical Corporation, et al. v. A.E. Staley Manufacturing Co., et al., Case No. 96-3610(NHP), U.S. District Court, District of New Jersey (Newark)

Enclosed is a copy of the "nexus memorandum" prepared by the Plaintiffs in the referenced actions, which we mentioned in our September 3, 1996 memorandum. The nexus memorandum provides a basic overview of some of the currently-available information establishing each Defendants' liability at the Wood Ridge Site. It is not intended to represent an exhaustive or complete summation of every transaction that each Defendant may have engaged in at the Site. The nexus memorandum was prepared solely for the purpose of helping all Defendants gain a general understanding of the nature of their connection to the Site and how that connection may compare with and relate to other Defendants.

Each Defendant also is receiving copies of any documents identified in the nexus memorandum as "representative" documents for their company(s). These documents constitute a representative sample of the various types of currently-available documents memorializing each Defendants' transactions at the Site, and are not intended to represent a complete package of all documents that may reference such Defendants in connection with the Site.



We hope that these materials will help you focus your search for relevant documents and witnesses, and to prepare for our meeting on October 1. We look forward to seeing you then. Thank you.

Donald W. Fowler
Samuel P. Moulthrop
Thomas T. Terp

M E M O R A N D U M

TO: All Defendants

DATE: September 13, 1996

RE: Morton International, Inc. v. A. E. Staley
Manufacturing Co., et al.
(D. N.J. Case No. 96-3609(NHP))

and

Velsicol Chemical Corp., et al. v. A.E. Staley
Manufacturing Co., et al.
(D. N.J. Case No. 96-3610(NHP))

I. INTRODUCTION

In an effort to further settlement discussions and negotiations among the parties in the referenced matters, the Plaintiffs in the above-referenced actions have prepared the following brief summary of operations at the former Berk/Wood Ridge Chemical Corporation facility in Bergen County, New Jersey (the "Site"), along with a brief overview of some of the currently-available information relating to the liability of each Defendant for conditions at the Site and in nearby Berry's Creek. This memorandum is based upon a detailed review and analysis of information obtained from a variety of sources, including business records from the Site (such as accounts receivable records, product sales ledgers, sales reports, correspondence, etc.), government agency records and files, and witness interviews. This memorandum was prepared and is distributed solely for the purposes of settlement and compromise negotiations and shall not be construed as an admission of any kind.

II. SITE BACKGROUND

In 1929, F.W. Berk & Company, Inc. ("Berk US"), a Maryland corporation owned and operated by its parent corporation, F.W. Berk & Company, Ltd., of England (now known as Defendant Redland Minerals Limited ("Redland")), constructed and began operations at a mercury-processing plant (the "Plant") on an approximately 7.1 acre tract in the northwest corner of the approximately 40.1-acre Site. In 1956, George W. Taylor, now deceased, purchased all of the outstanding shares of Berk US from Redland. Mr. Taylor continued to operate the Plant under the Berk name until June 30, 1960, when Mr. Taylor sold all of the assets and the business of Berk US, including the Site, to Wood Ridge Chemical Corporation ("Wood Ridge") (a wholly-owned subsidiary of Plaintiff Velsicol Chemical Corporation ("Velsicol")) and Berk US was dissolved. In 1967, Wood Ridge declared a land dividend of the undeveloped, approximately 33-acre portion of the Site to Velsicol. Wood Ridge continued to operate the Plant until 1968, when Velsicol sold the stock of Wood Ridge to Ventron Corporation ("Ventron"), into which Wood Ridge later merged. Ventron, a predecessor-in-interest to Plaintiff Morton International, Inc. ("Morton"), continued to operate the Plant until 1974. Ventron then sold the approximately 7.1-acre tract upon which the Plant was located to Robert M. and Rita W. Wolf, with Velsicol retaining ownership of the 33-acre undeveloped portion of the Site.

Throughout its history, the primary business activity at the Plant was the processing of mercury. In the 1960s, between 14,000 and 16,000 flasks of mercury were being processed at the Plant on an annual basis. These processes included:

1. Processing elemental or prime virgin mercury ("PVM") into inorganic mercury compounds, such as red oxide of mercury ("ROM"), yellow oxide of mercury ("YOM"), and chlorides of mercury;
2. Cleaning PVM and dirty (used) mercury into purer grades of mercury, such as triple-distilled-quality mercury or reagent cathodic mercury;
3. Processing elemental mercury into organic mercury compounds, such as phenyl mercuric acetate; and
4. Reclaiming mercury (by means of a "retort" process) from customers' waste materials, such as sludges, dental amalgam, batteries, and broken thermometers.

The Plant also resold PVM to customers, performed grinding and blending operations for some customers, and engaged in the toll-manufacture of some non-mercurial products for customers.

Most of the mercury processed at the Plant was used in connection with the production of inorganic mercurial compounds, such as ROM and YOM. It appears that battery manufacturers were the primary users of ROM. YOM, on the other hand, appears to have been used in the preparation of many organic mercurial compounds, such as phenyl mercuric acetate.

The next largest operation at the Plant involved the cleaning of PVM or dirty mercury to triple-distilled or reagent cathodic quality. The PVM or dirty mercury was cleaned primarily by passing it through a glass column of nitric acid. If the mercury was very dirty, it would be physically distilled by

placing it into a still and heating the mercury to remove the impurities.

Organic mercury compounds were manufactured at the Plant on a smaller scale. Such compounds were used primarily in biocides (slimicides and fungicides) used by the paint and paper industries.

The mercury reclamation/"retorting" process performed at the Plant involved salvaging mercury from customers' wastes, such as spent mercury batteries, broken thermometers, mercury-containing scrap, chemical sludges, and dental amalgam. The "retorting" process involved placing the waste material in a still, heating the still, and capturing the mercury vapors in a condenser. Currently-available information indicates that the distillation process did not recover all of the mercury in the waste and that a significant percentage of mercury remained in certain sludges and wastestreams.

Available documentation and witnesses confirm that at least 80% of all of the mercury used at the Plant in the 1960s and 1970s was supplied directly by customers who retained title to the mercury. Many of the Plant's business records, including product and sales ledgers, clearly distinguish customer-owned mercury at the Plant (identified by a capital "C" in product code references) from Plant-owned mercury (identified by a capital "W" (for "Wood Ridge") in product code references).

The mercury-processing activities at the Plant generated mercury-bearing waste streams, which over the years ultimately

resulted in a loss of mercury to the environment. It appears that mercury released at the Site may also have contributed to mercury contamination in nearby Berry's Creek. Available information indicates that hazardous substances also were released at the Site from the toll-processing of non-mercurial materials and the occasional grinding and/or blending operations performed for Plant customers.

III. SITE DEFENDANTS

A. Redland

As noted above, Redland is the current name of the company originally incorporated in England as F.W. Berk & Company, Ltd. ("Berk UK") in 1891. Currently-available information indicates that, in 1929, Berk UK caused the incorporation of two U.S. subsidiaries: Berk US and Carlstadt Development & Trading Co. ("CD&T"). CD&T acquired the Site land and leased it to Berk US for the operation of a mercury processing plant beginning in 1929. The operations of Berk US were set up, using Berk UK proprietary processes, by a Mr. Darbyshire, an employee of Berk UK who also became Vice President of Berk US. Throughout the period from 1929 through 1956, key directors and officers of Berk US also were directors and/or officers of Berk UK. In most cases, these were members of the founding Berk family.

Currently-available information indicates that Berk UK exercised significant involvement and control over the operations of Berk US throughout the period of its ownership of Berk US. In

addition to setting up the original U.S. company and operations, Berk UK officers and/or directors traveled frequently to the Site for the purpose of overseeing plant operations. Berk UK's involvement and control included, among other things, sharing of technical knowledge and processes, including training of Berk US personnel; purchase and maintenance of necessary insurance; purchase of raw materials and other supplies; establishment and/or approval of product pricing; and approval of employment policies, including personnel and compensation decisions.

B. Magnesium Elektron, Inc./Melberk

Currently-available information indicates that, during the 1950s, Defendant Magnesium Elektron, Inc. ("Magnesium") entered a joint venture with Berk US identified as "Melberk" through which Magnesium leased a portion of the Site and conducted zirconium manufacturing operations resulting in the release of hazardous substances at the Site.

C. Customers

As noted above, four basic processes were performed at the Plant on behalf of Plant customers, in addition to toll-processing of non-mercurial materials and grinding and/or blending services. The following Defendants, addressed alphabetically below, were customers of the Plant's toll-processing, grinding, and/or blending services, or were customers of the Plant who sent mercury-bearing waste material for reclamation and/or retained title to the mercury sent to the Site for cleaning and/or formulation into mercury chemicals.

Currently-available information reveals the following with respect to these Defendants:

1. A.E. Staley Manufacturing Co. ("Staley")

Between at least the late 1960s and early 1970s, Staley-owned mercury was cleaned to triple-distilled quality at the Plant on a monthly basis, with mercury shipments to the Plant by Staley totalling more than 300 pounds between July 1969 and June 1970 alone. Staley's Decatur, Illinois facility had been a Plant customer since at least the mid-1960s and continued to use the Plant's cleaning services through at least the early 1970s. Representative Staley documents include: MLE-000126, 130, 836.

2. Allied Signal Corp. (Allied Chemical Corp.) ("Allied")

In 1963 alone, more than 32,000 pounds of Allied-owned mercury were cleaned to PVM quality at the Plant for Allied. Allied remained a Plant customer until at least the early 1970s. During such period of time, the Plant serviced Allied's facilities in at least the following locations: Buffalo, New York; Hopewell, Virginia; Marcus Hook, Pennsylvania; and Morristown, New Jersey. Representative Allied documents include: MBC-001744-46; MLE-001069.

3. Aluminum Company of America ("ALCOA")

In 1965 alone, over 400 pounds of ALCOA-owned mercury were cleaned to "CVM" (clean virgin mercury)-quality at the Plant for ALCOA. Representative ALCOA documents include: MBC-001729.

4. American Cyanamid Co. ("Cyanamid")

In 1965 alone, over 3,800 pounds of Cyanamid-owned sludges were sent to the Plant where the mercury was recovered and converted into YOM for Cyanamid. In addition, between June 1969 and December 1970 alone, more than 1,200 additional pounds of Cyanamid-owned PVM were sent to the Plant to be converted into YOM or and/or reagent cathodic mercury or cleaned to triple-distilled quality for Cyanamid. The Plant serviced Cyanamid's facilities in at least the following locations between the early 1960s and the early 1970s: Linden and Bound Brook, New Jersey; Stamford and Danbury, Connecticut; Pearl River, New York; and Willow Island, West Virginia. Representative Cyanamid documents include: MBC-001734, 1736, 1739, 1741, 1744, 1746-1747, 1797, 2791; MWD-000024, 77-79; MLE-000005-7, 125-126, 130-131, 868-872.

5. Bailey Controls Co. (Bailey Meter Company) ("Bailey")

In 1969 and 1973 alone, more than 1,700 pounds of Bailey-owned mercury were cleaned to triple-distilled quality at the Plant for Bailey. Bailey had been a Plant customer since at least the early 1960s. Representative Bailey documents include: MLE-000825, 1071, 1079; MBC-001744, 1748.

6. BASF Corp. (Wyandotte Chemicals) ("BASF")

In addition to owning and/or operating two facilities near the Plant that discharged hazardous substances into Berry's Creek (as discussed later in this memorandum), more than 300 pounds of BASF-owned mercury were cleaned to triple-distilled quality at the Plant for BASF in 1970 alone. BASF had been a Plant customer

since at least the early 1960s. During such period of time, the Plant serviced at least BASF's Geismar, Louisiana and Wyandotte, Michigan facilities. Representative BASF documents include: MLE-000130-31, 828, 874; MBC-001744, 1768.

7. Beazer East, Inc. (Koppers) ("Koppers")

In 1970 alone, several pounds of Koppers-owned mercury were cleaned to triple-distilled quality at the Plant for Koppers. Representative Koppers documents include: MLE-000811.

8. Becton-Dickinson & Co., Inc. ("Becton")

Between at least the 1950s and early 1970s, more than 2,600 pounds of Becton-owned mercury were cleaned to triple-distilled quality at the Plant for Becton. In 1969 alone, more than 300 pounds of Becton-owned broken thermometers were sent to the Plant where the mercury was recovered and returned to Becton and more than 300 additional pounds of Becton-owned waste sludges were sent to the Plant through Hyinson, Wescott and Dunning, Inc. (the tradename under which Becton often operated) where the mercury in the sludge was recovered and returned to Becton. The Plant serviced Becton's facilities in at least the following locations between the early 1960s and early 1970s: E. Rutherford, New Jersey; Columbus, Nebraska; and Juncos, Puerto Rico.

Representative Becton documents include: MLE-000125, 322, 325, 384, 866-867, 1070, 1072; MBC-001744, 1748, 2660, 2791; MWD-000141.

In addition, a Becton facility is located near the Site (across Route 17 from the UOP Site) and has a NJPDES permit for

two outfalls (cooling and storm water) into Berry's Creek and one outfall to the Bergen County Utilities Authority, which permits the discharge by Becton of electroplating solution.

9. Belfort Instrument Co. ("Belfort")

In 1965 alone, more than a dozen pounds of Belfort-owned mercury were cleaned to triple-distilled quality at the Plant for Belfort. Representative Belfort documents include: MBC-001729..

10. Belmont Metals, Inc. (Belmont Smelting & Refining Works, Inc.) ("Belmont")

In 1969, 1970, and 1973 alone, more than 8,400 pounds of Belmont-owned mercury were cleaned to triple-distilled quality at the Plant for Belmont. Belmont-owned mercury also was stored at the Plant during such period of time. Representative Belmont documents include: MLE-000006-7, 125-126, 130, 864-865, 1067-1070, 1077-1078; MWD-000105; MBV-000720.

11. The BOC Group, Inc. (AIRCO Industrial Gases/Air Reduction Company, Inc. ("Air Reduction") and Airco, Inc.) ("Airco")

In 1970 alone, more than 100 pounds of Air Reduction-owned mercury were cleaned to triple-distilled quality at the Plant for Air Reduction and more than several dozen pounds of Airco-owned mercury were cleaned to triple-distilled quality at the Plant for Airco. Air Reduction had been a Plant customer since the early 1960s. During such period of time, the Plant serviced Air Reduction's facilities in at least the following locations: Cleveland, Ohio; Murray Hill, New Jersey; and Calvert City, Kentucky. Representative Air Reduction documents include:

MLE-000827; MBC-001744-1745, 2654, 2735. Representative Airco documents include: MLE-000131, 826, 1069-70.

12. Canrad Inc. (Canrad Precision Ind., Inc.) ("Canrad")

Canrad-owned mercury was cleaned to triple-distilled quality and/or converted to reagent cathodic mercury at the Plant for Canrad during at least 1972 and 1973. Representative Canrad documents include: MLE-001067, 1069-1070.

13. CGC, Inc. (Canadian Gypsum Co. Ltd.) ("Gypsum")

In 1969 and 1970 alone, the Plant performed grinding services for Gypsum with respect to more than 21,000 pounds of Gypsum-owned Ziram material. Representative Gypsum documents include: MLE-000099, 313, 359.

14. Ciba-Geigy Corp. (Toms River Chemical Corp.) ("Toms River")

In 1973 alone, more than 1,500 pounds of Toms River-owned mercury-bearing sludge were sent to the Plant for reclamation and/or cleaning for Toms River. Toms River had been a Plant customer since at least the early 1960s. Representative Toms River documents include: MBC-001893; MLE-001074.

15. Columbia University ("Columbia")

In 1969, 1970, and 1973 alone, more than 200 pounds of Columbia-owned mercury were cleaned to triple-distilled quality at the Plant for Columbia. Columbia-owned mercury also was stored at the Plant during such period of time. Representative Columbia documents include: MBV-000560; MLE-000006, 126, 130, 823, 863, 1068-1070, 1078.

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16. Connecticut Light & Power Company Inc. (Hartford Electric Company, Inc.) ("Hartford")

During the 1960s, Hartford sent more than 700 flasks (more than 57,000 pounds) of Hartford-owned waste mercury to the Plant for disposal when Hartford dismantled a mercury boiler at its generating plant.

17. Conopco, Inc. (Chesebrough Ponds U.S.A. Co. Division ("Chesebrough") and Day & Baldwin, Inc. ("Day & Baldwin"))

In 1972 and 1973 alone, Chesebrough-owned mercury was stored at the Plant in quantities ranging up to over 30,000 pounds at any one time. Additional information indicates that at least a portion of the Chesebrough-owned mercury stored at the Plant was cleaned to triple-distilled quality for Chesebrough. Representative Chesebrough documents include: MBV-000539, 542; MLE-1070, 1078.

In 1965 alone, several flasks (more than 200 pounds) of Day & Baldwin-owned virgin mercury were cleaned at the Plant for Day & Baldwin. Day & Baldwin remained a Plant customer until at least the early 1970s. Representative Day & Baldwin documents include: MBC-001738, 1741; MLE-000070.

18. Cooper Industries (Crouse-Hinds Sepco Corp. (Connecticut International Corp.) ("Crouse") and Wagner Electric Co. ("Wagner"))

In 1970 alone, several pounds of Crouse-owned mercury were cleaned to triple-distilled quality at the Plant for Crouse and more than a dozen pounds of Wagner-owned mercury were cleaned to triple-distilled quality at the Plant for Wagner's Tungsol Division. Wagner had been a Plant customer since at least the

late 1960s. Representative Crouse documents include:

MLE-000822. Representative Wagner documents include:

MLE-000130, 880; MWD-000252.

19. Cosan Chemical Corp. ("Cosan")

In addition to operating a facility near the Plant that discharged hazardous substances into Berry's Creek (as discussed later in this memorandum), Cosan was a major customer and competitor of the Plant. Cosan is or was one of the largest producers of organic mercurial compounds in the United States, consuming over 150,000 pounds of mercury per year (17.3% of the entire mercury market in 1967-68). The Plant both supplied Cosan with finished mercurial products for resale and manufactured mercurial intermediates (usually YOM) for Cosan. In connection with the Plant's extensive manufacturing relationship with Cosan, over 13,000 pounds of Cosan-owned mercury were converted to YOM at the Plant for Cosan in 1965 alone. Additional information indicates that, in 1969 alone, more than 500 additional pounds of Cosan-owned mercury either were converted to YOM at the Plant for Cosan or were delivered to the Plant as "dirty mercury" to be cleaned and returned to Cosan. Cosan had been a Plant customer since at least the early 1960s and remained a Plant customer until at least the early 1970s. (Cosan even considered buying the Plant from Ventron in 1973.) During such period of time, the Plant serviced at least Cosan's Elizabeth and Clifton, New Jersey facilities. Representative Cosan documents include:

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MBC-001248-1250, 1744, 1750, 1796, 2844; MLE-000144, 862;
MWD-000083, 105, 265.

20. Curtiss-Wright Corp. ("Curtiss")

On numerous occasions during at least the 1950s, Curtiss sent Curtiss-owned mercury to the Plant where the mercury was cleaned and/or processed for Curtiss and returned to Curtiss. During such period of time, the Plant serviced at least Curtiss' Wood Ridge, New Jersey facility.

21. D.F. Goldsmith Chemical & Metal Corp. ("Goldsmith")

Goldsmith-owned dirty mercury sludge was sent to the Plant where at least several dozen flasks (more than 3,300 pounds) of mercury were recovered and returned to Goldsmith in 1964 and 1965 alone. Additional information indicates that more than 400 pounds of mercury also were recovered from dirty Goldsmith-owned mercury during 1969 alone, and that the Plant converted more than 300 additional pounds of Goldsmith-owned mercury into ROM and mercuric acetate for Goldsmith during 1970 alone. In addition, more than 1,900 pounds of Goldsmith-owned mercury were stored at the Plant in 1973 alone. Goldsmith had been a Plant customer since at least the early 1960s. Representative Goldsmith documents include: MBC-001734, 2791; MBM-000229, 234; MBV-000720; MLE-000009, 21, 1075; MWD-000218, 232.

22. Diamond Shamrock Chemicals Co. ("Diamond")

In addition to operating a facility near the Plant that discharged hazardous substances onto the Site and into Berry's Creek (as discussed later in this memorandum), more than 100

pounds of Diamond-owned mercury were cleaned to triple-distilled quality at the Plant for Diamond during 1969 and 1973 alone. Representative Diamond documents include: MLE-001070, 1078; MWD-000059.

23. Duracell, Inc. (Mallory Battery Co., Inc.) ("Mallory")

Mallory was one of the plant's largest customers, having engaged in transactions at the Plant involving millions of pounds of mercury. The Plant supplied over 500,000 pounds of ROM (over \$1,400,000 worth of ROM) to Mallory in 1963 alone. In 1965 and 1966, at least an additional 1,200,000 pounds of Mallory-owned mercury was formulated into ROM at the Plant for Mallory. Between 1966 and 1969, at least an additional 2,300,000 pounds of Mallory-owned and insured mercury was formulated into ROM for Mallory. By early 1967, the Plant was producing at least 84,000 pounds of ROM for Mallory each month and Mallory was negotiating with the Plant for construction of expanded production areas at the Plant to accommodate Mallory's increasing ROM demands. Between 1966 and 1968, Mallory-owned mercury accounted for approximately 60% of all mercury processed at the Plant. Well over 1,000 flasks (over 76,000 pounds) of Mallory-owned mercury were stored at the Plant at any given time, which often amounted to more than half of the mercury stored at the Plant. The Mallory ROM formulation activities at the Plant were performed pursuant to a toll-processing agreement that provided for Mallory's purchase from the Plant of up to 1,100,000 pounds of ROM per year.

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In addition to formulating large amounts of Mallory-owned mercury into ROM on a toll basis, the Plant also cleaned mercury to triple-distilled quality and reclaimed mercury for Mallory from discarded batteries, dental amalgam, and other mercury-containing waste supplied by Mallory. Well over 1,000,000 pounds of scrap batteries and other mercury residues were retorted at the Plant for Mallory beginning in at least the early 1950s and continuing through at least the early 1970s. Mallory also sent large quantities of scrap batteries to the Plant for reclamation during World War II in conjunction with the United States and/or Defendant Ray-O-Vac Corporation under the name "RMR." The Plant generally performed such reclamation activities for a toll charge, with all of the reclaimed mercury either credited to Mallory's mercury reserves stored at the Plant or formulated into ROM for Mallory. In addition, over 3,000 pounds of Mallory-owned mercury was converted into Calomel at the Plant for Mallory in 1969 and 1970 alone.

During Mallory's relationship with the Plant, the Plant serviced Mallory's facilities in at least the following locations: Tarrytown, New York; Clarkson, Ontario, Canada; Cleveland, Tennessee; Lexington, North Carolina; and Indianapolis, Indiana. Representative Mallory documents include: MBC-001713, 1716, 1744, 1758, 1773, 1796-1797, 1802, 1817, 1825, 1834, 1848, 1858, 1957-1959, 1982-1985, 1992, 1993-1994, 2087, 2791, 3091-3095, 3277, 3281, 3288, 3389, 3955; MLE-000004, 8, 10,

14, 125, 137, 141, 146, 150, 338, 806-809, 847-849, 1073-1075;
MMA-000486-488.

24. Dura-Electric Lamp Co., Inc. ("Dura")

In 1965 alone, several pounds of Dura-owned mercury were sent to the Plant for cleaning and return to Dura. Representative Dura documents include: MBC-001733.

25. E.I. DuPont de Nemours & Co., Inc. ("DuPont")

DuPont was one of the Plant's largest customers. DuPont's relationship with the Plant, which began as far back as the 1930s, involved principally the conversion of DuPont-owned mercury into YOM. This relationship eventually was memorialized in a formal, written toll-processing agreement, which provided for up to 125,000 pounds of DuPont's mercury to be formulated into YOM at the Plant on an annual basis, and specified that DuPont retained title to the mercury and was responsible for its insurance while at the Plant. DuPont kept its mercury in a separate safe, which DuPont purchased and placed at the Plant. Several hundred flasks (several thousand pounds) of DuPont-owned mercury were stored at the Plant for DuPont at any one time. During 1963 and 1964 alone, more than 2,200 flasks (more than 170,000 pounds) of DuPont-owned mercury were converted into YOM at the Plant for DuPont. More than 195,000 additional pounds of DuPont-owned mercury were converted into YOM at the Plant for DuPont in 1965 and 1967, with an additional 6,000 pounds converted in April of 1968 alone. Between April of 1969 and May

of 1970, over 62,000 additional pounds of DuPont-owned mercury were converted into YOM at the Plant for DuPont.

In addition, more than 4,800 pounds of DuPont-owned mercury were converted into corrosive sublimate (mercuric chloride) at the Plant for DuPont in 1963, 1969, and 1970 alone, the Plant recovered over 13,800 pounds of thallium from DuPont's spent thallium catalyst in 1963 alone, and the Plant produced thallium sulfate for DuPont during the 1950s, pursuant to a toll-processing arrangement. More than 400 pounds of DuPont-owned mercury also were cleaned to triple-distilled quality at the Plant for DuPont in 1969, 1970, and 1973 alone.

During the 1960s and early 1970s, the Plant serviced DuPont's facilities in at least the following locations: Moosic, Pennsylvania; Baltimore, Maryland; Wilmington, Delaware; Louisville, Kentucky; and Deepwater, New Jersey. Representative DuPont documents include: MBC-001626, 1629, 1723, 1744, 1752, 1796, 2677, 2725, 2783-2784, 3341; MLE-0000006, 125, 130, 144-145, 153, 820, 857-858, 1078; MMA-000066, 72-76, 761-762; MWD-000015, 30, 41, 46, 60, 107, 254, 261.

26. Eastern Smelting & Refining Corp. ("Eastern")

In 1966 alone, more than 200 pounds of Eastern-owned mercury were cleaned to "CVM" (clean virgin mercury)-quality at the Plant for Eastern and more than 500 additional pounds of Eastern-owned sludge were retorted at the Plant for Eastern. In addition, more than 800 pounds of Eastern's dirty mercury were delivered to the Plant to be cleaned for Eastern and more than 13,000 pounds of

Eastern-owned mercury were cleaned to triple-distilled quality at the Plant for Eastern in 1969 and 1970 alone. Additional information indicates that more than 700 pounds of Eastern-owned mercury were stored at the Plant for Eastern during 1972 alone. Eastern had been a Plant customer since at least the early 1960s. Representative Eastern documents include: MBC-001726, 2761-2763; MBV-000500, 866; MLE-000006-7, 125-126, 130-131, 1070-1072, 1079; MMA-000062; MWD-000078, 108, 131, 137, 255.

27. Englehard Minerals and Chemicals Corp. ("Englehard")

In 1965, 1969, 1970, and 1972 alone, more than several dozen pounds of Englehard-owned "dirty" mercury were sent to the Plant to be cleaned for Englehard, more than 2,400 pounds of Englehard's waste dental amalgam were sent to the Plant where the mercury was recovered and returned to Englehard, and more than 160 pounds of Englehard-owned mercury were cleaned to triple-distilled quality and reagent cathodic quality for Englehard. More than 900 pounds of Englehard-owned mercury were stored at the Plant for Englehard in 1972 alone. Englehard had been a Plant customer since at least the early 1960s. Representative Englehard documents include: MBC-001744, 1752, 1796; MBV-000500; MLE-000129, 819, 1071-73, 1076; MWD-000012, 35, 78.

28. Environmental Control Systems ("ECS")

In 1966 alone, more than several dozen pounds of ECS-owned mercury were cleaned to triple-distilled quality at the Plant for ECS. Representative ECS documents include: MBC-001725.

29. Federal Aviation Administration ("FAA")

In 1965 alone, more than several dozen pounds of FAA-owned mercury were cleaned at the Plant for the FAA. Representative FAA documents include: MBC-001733.

30. FMC Corp. ("FMC")

In 1969 alone, more than several dozen pounds of FMC-owned mercury were cleaned to triple-distilled quality at the Plant for FMC. FMC had been a Plant customer since at least the mid-1960s and remained a Plant customer until at least the early 1970s. Representative FMC documents include: MBC-002731; MLE-000125, 853, 1069-1071.

31. Garfield Refining Company (Garfield Baring Corp./ Garfield Smelting & Refining Co.) ("Garfield")

Between the mid-1960s and the early 1970s alone, more than 5,800 pounds of Garfield-owned "dirty" mercury were cleaned at the Plant for Garfield, more than 20,000 pounds of Garfield's waste dental amalgam were sent to the Plant where the mercury was recovered and returned to Garfield, and more than 200 pounds of Garfield-owned mercury were cleaned to triple-distilled quality at the Plant for Garfield. In addition, more than 600 pounds of Garfield-owned mercury were stored at the Plant. Representative Garfield documents include: MBC-002791; MBM-000229; MBV-000088, 529, 628, 684, 866; MLE-000125, 134, 136, 300, 338, 818, 1068-1070, 1073, 1074, 1077; MWD-000232, 265.

32. General Color. Co., Inc. ("GCC")

In 1970 alone, more than 500 pounds of GCC-owned mercury were cleaned to triple-distilled quality at the Plant for GCC.

GCC had been a Plant customer since at least the early 1960s.

Representative GCC documents include: MBC-001744, 1753;

MLE-000007, 983.

33. General Electric Company (G.E. and RCA-Radio Corporation of America) ("G.E./RCA")

G.E./RCA was a major customer of the Plant's mercury-cleaning services. Between 1967 and 1969 alone, over 8,000 pounds of G.E./RCA-owned dirty mercury were cleaned to triple-distilled quality at the Plant for a toll-processing fee. G.E./RCA-owned mercury also was stored at the Plant for G.E./RCA during at least the early 1970s. G.E./RCA had been a Plant customer since at least the early 1960s. During such period of time, the Plant serviced G.E./RCA's facilities in at least the following locations: Juana Diaz, Puerto Rico; Edmore, Michigan; Providence, Rhode Island; Schnectety and Waterford, New York; Cincinnati, Ohio; Harrison, New Jersey; Louisville, Lexington, and Owensboro, Kentucky; and Fort Wayne, Indiana. Representative G.E./RCA documents include: MBC-001744, 1754, 1763, 2084, 2677, 2682, 2693, 2700, 2712, 2763; MBV-000720; MLE-000006-7, 125, 130-131, 814-817, 851-852, 1069-1071, 1078; MMA-000020-21; MWD-000057, 78, 112, 114, 131, 137, 252, 262.

34. General Signal Corp. ("GSC")

In 1970 alone, more than several dozen pounds of GSC-owned mercury were cleaned to triple-distilled quality at the Plant for GSC. Representative GSC documents include: MLE-000824.

35. Gilmartin Instrument Co. ("Gilmartin")

In 1966 alone, more than several dozen pounds of Gilmartin-owned mercury were cleaned to triple-distilled quality at the Plant for Gilmartin. Gilmartin remained a Plant customer until at least the early 1970s. Representative Gilmartin documents include: MBC-001719; MLE-001069-1070.

**36. GTE Operations Support Incorporated
(Sylvania/GTE) ("GTE")**

In 1969 and 1970 alone, more than 200 pounds of GTE-owned mercury were cleaned to triple-distilled quality at the Plant for GTE and more than 400 pounds of GTE-owned dirty mercury and sludge were sent to the Plant where the mercury was recovered and returned to GTE. Additional information indicates that more than 300 pounds of GTE-owned mercury were stored at the Plant for GTE in 1973 alone. GTE had been a Plant customer since at least the early 1960s. During such period of time, the Plant serviced GTE's facilities in at least the following locations: Melrose Park, Illinois; Danvers, Massachusetts; St. Marys and Towanda, Pennsylvania; and Versailles, Kentucky. Representative GTE documents include: MBC-001744, 1765, 2660, 2677, 2679; MBV-000542; MLE-000006, 8, 17, 125, 790, 1069-1071, 1073.

37. Hoffman-LaRoche, Inc. ("Hoffman")

In the early 1940s, Hoffman sent mercuric sulfide residue wastes to the Plant for rework and/or recovery of the mercury for Hoffman.

38. Hudsar, Inc. ("Hudsar")

In 1964, 1969, and 1970 alone, more than 2,600 pounds of Hudsar-owned waste mercury batteries and dirty mercury were sent to the Plant where the mercury was recovered and returned to Hudsar. Representative Hudsar documents include: MBM-000234; MLE-000134, 324, 339, 781; MWD-000114, 122, 163, 250.

39. International Nickel, Inc. ("Nickel")

In 1969 and 1970 alone, more than 4,200 pounds of Nickel-owned dirty mercury were cleaned to triple-distilled quality at the Plant for Nickel. More than 300 pounds of Nickel-owned mercury were stored at the Plant for Nickel in 1969 alone. Representative Nickel documents include: MBV-000500; MLE-000006-7, 125-126, 130-131, 834-835, 1069-1071, 1078; MWD-000006, 17, 30, 48, 114, 122, 254, 261, 265.

40. J.M. Ney Company ("Ney")

Between the early 1960s and the early 1970s alone, more than 500 pounds of Ney-owned dirty mercury were sent to the Plant for cleaning and return to Ney, more than 1,400 pounds of Ney-owned mercury were cleaned to triple-distilled quality at the Plant for Ney, and over 2,900 pounds of Ney-owned waste dental amalgam were sent to the Plant where the mercury was recovered and returned to Ney. Representative Ney documents include: MBC-002791; MBM-000229, 234, 237; MLE-000006-8, 14, 125-126, 130, 134, 136, 300, 338, 800, 1073; MWD-000024, 58, 69, 116-117, 131, 137, 218, 232, 250, 252.

41. James River Corp. (Crown Zellerbach Corp.) ("Crown")

In 1970 alone, more than several dozen pounds of Crown-owned mercury were cleaned to triple-distilled quality at the Plant for Crown. Representative Crown documents include: MLE-000007, 1002.

42. K.E.M. Chemical Co. ("K.E.M.")

During the late 1960s and early 1970s alone, more than 200 pounds of K.E.M.-owned mercury were cleaned to ROM-grade, triple-distilled quality, and reagent cathodic-grade mercury at the Plant for K.E.M. Representative K.E.M. documents include: MWD-000058; MBC-001723, 1726; MLE-000129, 812, 1077.

43. M.W. Kellogg Co. ("Kellogg")

In 1965 alone, more than several dozen pounds of Kellogg-owned mercury were cleaned to triple-distilled quality at the Plant for Kellogg. Kellogg remained a Plant customer until at least the late 1960s. Representative Kellogg documents include: MBC-001730; MWD-000012.

44. Mallinckrodt Chemical, Inc. ("Mallinckrodt")

During the late 1960s and early 1970s alone, over 20,000 pounds of Mallinckrodt-owned mercury were converted to ROM and/or battery-grade mercury at the Plant for Mallinckrodt (pursuant to a toll-processing/conversion agreement). Over 61,000 pounds of mercurous chloride (Calo-Chlor 2-1) also were toll-manufactured at the Plant for Mallinckrodt using Mallinckrodt-owned mercury in 1972 alone. In addition, over 1,900 pounds of Mallinckrodt-owned mercury were cleaned to PVM quality at the Plant for Mallinckrodt

in 1969 alone. Mallinckrodt-owned mercury also was stored at the Plant. Representative Mallinckrodt documents include: MBC-001249, 1941, 1944-1945, 1947, 2581; MLE-000139, 850, 1081; MWD-000057, 60, 64, 79.

45. Merck & Co., Inc./Metalsol ("Merck")

In 1969, 1970, and 1973 alone, Merck-owned mercury was sent to the Plant where more than 53,000 pounds were converted into ROM, more than 6,700 more pounds were cleaned to triple-distilled quality, and over 5,700 more pounds were converted into YOM for Merck. (The Plant performed the conversion work (some of which occurred during a strike at Merck) for a toll-processing fee.) More than 4,200 pounds of Merck-owned mercury also were stored at the Plant for Merck during this time period. Merck had been a Plant customer since at least the early 1960s. Representative Merck documents include: MBC-001744, 1759, 2607, 2613; MBV-000500, 529, 542, 615; MLE-000124-126, 138, 140, 144, 147, 846, 1074-1077, 1080; MMA-000838; MWD-000078.

46. Mercury Instruments, Inc. ("ME")

In 1973 alone, more than several dozen pounds of ME-owned mercury were cleaned to triple-distilled quality at the Plant for ME. ME had been a Plant customer since at least the early 1960s. Representative ME documents include: MBC-001744, 1759; MLE-001071-1072, 1079.

47. Mount Union College

In 1965 alone, more than 100 pounds of mercury owned by the College were cleaned at the Plant for the College. Mount Union

College remained a Plant customer until at least the late 1960s. Representative Mount Union College documents include: MBC-001732; MLE-000804.

48. N.L. Industries, Inc. (National Lead Company (Goldsmith Brothers Division)) ("National Lead")

Between the early 1960s and early 1970s alone, more than 400 pounds of National Lead-owned dirty mercury and/or dental amalgam were sent to the Plant where the mercury was cleaned and/or recovered and returned to National Lead, over 2,100 pounds of National Lead-owned mercury were cleaned to triple-distilled quality at the Plant for National Lead, and over a dozen pounds of National Lead-owned mercury were converted into mercuric acetate for National Lead. More than 1,900 pounds of National Lead-owned mercury also were stored at the Plant for National Lead in 1973 alone. Between the early 1960s and early 1970s, the Plant serviced National Lead's facilities in at least the following locations: Cincinnati, Ohio; Chicago, Illinois; and South Amboy, North Amboy, and Sayersville, New Jersey.

Representative National Lead documents include: MBC-001744, 1760, 2735, 2750, 2791; MBM-000229, 234; MBV-000720; MLE-000007-8, 14, 21, 136, 300, 813; MWD-000048, 232.

49. New Jersey Institute of Technology (Newark College of Engineering) ("NJIT")

In 1970 alone, more than several dozen pounds of NJIT-owned mercury were cleaned to triple-distilled quality at the Plant for NJIT. Representative NJIT documents include: MLE-000844.

50. New York City Transit Authority ("NYCTA")

In 1969 and 1970 alone, more than 400 pounds of NYCTA-owned mercury were converted to reagent-grade mercury at the Plant for NYCTA. More than 300 additional pounds of NYCTA-owned mercury were cleaned at the Plant for NYCTA in 1973 alone.

Representative NYCTA documents include: MLE-000005, 124, 802, 1067, 1078.

51. Northeast Chemical Co. ("Northeast")

In 1969 and 1970 alone, more than 200 pounds of Northeast-owned mercury were cleaned to triple-distilled quality at the Plant for Northeast. Representative Northeast documents include: MLE-000130, 799; MWD-000031.

52. Olin Corp. (Olin Mathieson Chemical Corp.) ("Olin")

In 1970 alone, more than 300 pounds of Olin-owned mercury were cleaned to triple-distilled quality at the Plant for Olin. Olin had been a Plant customer since at least the early 1960s. During such period of time, the Plant serviced Olin's facilities in at least the following locations: New Haven, Connecticut; Pisgah Forest, North Carolina; and Marion and East Alton, Illinois. Representative Olin documents include: MBC-001744, 1761, 2654, 2684, 2697; MLE-000007, 955.

53. Pease & Curren, Inc. ("P&C")

In 1969 alone, more than 600 pounds of P&C-owned waste dental amalgam were sent to the Plant where the mercury was recovered and returned to P&C. Several flasks (more than 300 pounds) of P&C-owned dirty mercury also were cleaned at the Plant

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and returned to P&C in 1964 alone. Representative P&C documents include: MBM-000231; MLE-000300, 952.

54. Pfizer Inc. ("Pfizer")

In 1969 and 1970 alone, more than several dozen pounds of Pfizer-owned mercury were converted to reagent-grade mercury at the Plant for Pfizer. Pfizer had been a Plant customer since at least the mid-1960s. Representative Pfizer documents include: MBC-001740; MLE-000129, 798, 1070; MWD-000059.

55. Prime Source Corporation (Phillips & Jacobs, Inc.) ("P&J")

In 1969 and 1970 alone, over 1,600 pounds of P&J-owned mercury were cleaned to triple-distilled quality at the Plant for P&J. P&J had been a Plant customer since at least the early 1960s. Representative P&J documents include: MBC-001744, 1762; MLE-000006-7, 125, 130-131, 840-841, 1071-1072; MWD-000078, 105, 112, 114, 122.

56. PSG Industries, Inc. (Philadelphia Scientific Glass, Inc.) ("PSG")

In 1969 alone, over a dozen pounds of PSG-owned mercury/waste thallium amalgam were sent to the Plant for recovery and/or conversion. PSG had been a Plant customer since at least the mid-1960s. Representative PSG documents include: MBC-001722; MLE-000842.

57. Public Service Electric & Gas ("PSE&G")

During the 1950s, PSE&G sent over 700 flasks (over 57,000 pounds) of PSE&G-owned waste mercury to the Plant for disposal when PSE&G dismantled a mercury boiler at its Carney, New Jersey

generating plant. Over 100 pounds of PSE&G-owned mercury also were cleaned to triple-distilled quality at the Plant for PSE&G in 1969 and 1970 alone. Representative PSE&G documents include: MLE-000006-7, 125, 797, 838, 1068-1071.

58. Pure Lab of America ("Pure Lab")

In 1965 alone, over 200 pounds of Pure Lab-owned waste dental amalgam were sent to the Plant where the mercury was recovered and returned to Pure Lab. Representative Pure Lab documents include: MBC-001738.

59. Ray-O-Vac Corporation (ESB, Inc.) ("Ray-O-Vac")

In 1969, 1970, 1972, and 1973 alone, over 11,000 pounds of Ray-O-Vac-owned battery residues and over 17,000 pounds of Ray-O-Vac's scrap batteries were sent to the Plant where the mercury was recovered and returned to Ray-O-Vac. During this same period of time, over 4,600 pounds of Ray-O-Vac-owned dirty mercury also were cleaned at the Plant for Ray-O-Vac. In addition, Ray-O-Vac sent large quantities of scrap batteries to the Plant for reclamation during World War II in conjunction with the United States and/or Mallory under the name "RMR." At least 100 pounds of Ray-O-Vac-owned mercury were stored at the Plant for Ray-O-Vac at any one time. The Plant serviced at least Ray-O-Vac's Clinton, Massachusetts and Madison, Wisconsin facilities. Representative Ray-O-Vac documents include: MBC-002761-2763; MBV-000866; MLE-000008, 15, 123, 134, 136-137, 323-324, 339, 856, 994, 1065, 1073-1074.

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60. Rhône-Poulenc, Inc. (Alcolac Chemical Co./Guard Chemical Co.) ("Guard")

In 1965 alone, Guard-owned dirty mercury was sent to the Plant where more than several dozen pounds of mercury were converted into product for Guard. Guard had been a Plant customer since at least the early 1960s. Representative Guard documents include: MBC-001744, 1756; MBC-002791.

61. Royce Associates (Royce Chemical) ("Royce")

In 1969 and 1970 alone, over 1,100 pounds of Royce-owned product was sent to the Plant where it was blended/mixed and returned to Royce. Royce had been a Plant customer since at least the early 1960s. Representative Royce documents include: MBC-002757; MLE-000336, 343.

62. Rutgers, The State University ("Rutgers")

In 1969 alone, over a dozen pounds of Rutgers-owned mercury were cleaned to triple-distilled quality at the Plant for Rutgers. Representative Rutgers documents include: MLE-000131, 796.

63. Seaforth Mineral & Ore Co. ("Seaforth")

In 1966 alone, more than several dozen pounds of Seaforth-owned mercury were cleaned to "CVM" (clean virgin mercury)-quality at the Plant for Seaforth. Representative Seaforth documents include: MBC-001723.

64. State University of New York at Buffalo ("S.U.N.Y.")

In 1965 and 1969 alone, over 100 pounds of S.U.N.Y.-owned mercury were cleaned at the Plant for S.U.N.Y. Representative S.U.N.Y. documents include: MBC-001733; MLE-000803.

65. Tennessee Gas Pipeline Company (Tenneco, Inc./Nuodex Division) ("Nuodex")

Between the early 1960s and early 1970s alone, more than 119,000 pounds of Nuodex-owned mercury were converted into either YOM or ROM at the Plant for Nuodex. During this same period of time, thousands of pounds of Nuodex-owned mercury were stored at the Plant for Nuodex at any one time. The Plant serviced at least Nuodex's Elizabeth and Piscataway, New Jersey facilities. Representative Nuodex documents include: MBC-001744, 1761, 2596, 2603-2604, 2613; MLE-000010, 12, 141, 144, 789; MWD-000012, 17-19, 50, 78, 116, 133-134, 144.

66. Uehling Instruments Co. ("Uehling")

Uehling regularly sent Uehling-owned dirty mercury to the Plant for cleaning and/or reclamation and return to Uehling.

67. Union Carbide Corporation ("Carbide")

Carbide was one of the Plant's biggest customers, principally for the formulation of Carbide-owned mercury into mercuric salts, such as Calomel (mercurous chloride) and corrosive sublimate (mercuric chloride). Between the early 1960s and early 1970s alone, more than 28,000 pounds of Carbide-owned mercury were converted into mercuric salts at the Plant for Carbide, sometimes at the rate of over 3,000 pounds per month. (This particular conversion was performed pursuant to a formal toll-processing agreement.) In 1969 and 1970 alone, over 23,000 pounds of Carbide-owned mercury also were converted into ROM at the Plant for Carbide. To accomplish these conversions, as many as 50 flasks (over 3,800 pounds) of Carbide-owned mercury (which

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Carbide insured while at the Plant) were stored at the Plant at any one time.

In addition, during the mid-1960s and early 1970s alone, over 2,100 pounds of Carbide-owned dirty mercury and over 47,000 pounds of Carbide-owned waste batteries (up to 1,600 pounds per month at certain times) were sent to the Plant where the mercury was recovered and returned to Carbide, and more than several dozen pounds of Carbide-owned mercury were cleaned to triple-distilled quality at the Plant for Carbide. (Carbide battery parts still could be found on the surface of the Site in the 1990s.)

Carbide had been a Plant customer since at least the early 1960s. During such period of time, the Plant serviced Carbide facilities in at least the following locations: Asheboro, North Carolina; Cleveland and Fremont, Ohio; New York City, New York; Whiting, Indiana; Paducah, Kentucky; Burlington and Bennington, Vermont; Maryville, Missouri; Toronto, Canada; and Newark, New Jersey. Representative Carbide documents include: MBC-000923, 930, 1627, 1744, 1766, 1796, 2011-2012, 2635, 2654, 2761-2763, 2772-2773; MLE-000008-10, 15, 18, 130, 145, 150, 154, 339, 784-788, 1073-1074, 1079; MMA-000033, 398-405, 422; MWD-000079, 85, 112, 114, 143, 252, 261, 267, 393, 395; GLA-003091.

68. University of Illinois

In 1970 alone, more than several dozen pounds of mercury owned by the University of Illinois were cleaned to triple-distilled quality at the Plant for the University. The

University had been a Plant customer since at least the mid-1960s. Representative University of Illinois documents include: MBC-001728; MLE-000130, 783.

69. University of Minnesota

In 1970 alone, over 1,200 pounds of mercury owned by the University of Minnesota were converted to reagent-grade mercury at the Plant. The University had been a Plant customer since at least the mid-1960s. Representative University of Minnesota documents include: MBC-001734; MLE-000005, 129, 845.

70. Var-Lac-Oid Chemical Co., Inc. ("Var-Lac")

In 1965 alone, Var-Lac sent more than several dozen pounds of waste scrap to the Plant where the mercury in the scrap was reworked and returned to Var-Lac. Representative Var-Lac documents include: MBC-001728.

71. W.A. Baum Co., Inc. ("Baum")

In 1973 alone, over 10,000 pounds of Baum-owned mercury were cleaned to triple-distilled quality at the Plant for Baum. Baum had been a Plant customer since at least the early 1960s. Representative Baum documents include: MBC-001744, 1748; MLE-001072.

72. Western Michigan University ("WMU")

In 1970 alone, more than several dozen pounds of mercury owned by WMU were converted into reagent cathodic-grade mercury at the Plant for WMU. Representative WMU documents include: MLE-000129, 831.

73. Westinghouse Electric Corp. ("Westinghouse")

During the late 1960s and early 1970s alone, over 5,000 pounds of Westinghouse-owned sludges were sent to the Plant where the mercury was recovered and returned to Westinghouse. In addition, over 7,900 pounds of Westinghouse-owned mercury were cleaned to triple-distilled quality at the Plant for Westinghouse during the same period of time. Additional information indicates that up to 300 pounds of Westinghouse-owned mercury were stored at the Plant at any one time.

Westinghouse had been a Plant customer since at least the early 1960s. During such period of time, the Plant serviced Westinghouse's facilities in at least the following locations: Allentown, Pennsylvania; Salinas, Kansas; Bloomfield and Edison, New Jersey; and Fairmont, West Virginia. Representative Westinghouse documents include: MBC-001744, 1768, 2742; MBV-000500, 866; MLE-000006-8, 17, 125-126, 130-131, 134, 325, 342, 830, 875-879, 1048, 1073-1074, 1078; MWD-000024, 58-59, 79, 114, 122, 231-232, 250, 254, 261-262, 265.

D. Adjacent Landowner Defendants

There are at least two facilities near the Site whose operations resulted in the discharge of hazardous substances onto and/or across the Site -- the "Diamond Shamrock facility" and the "Randolph Products facility." Currently-available information with respect to such facilities' impact on conditions at the Site is discussed in more detail below.

1. Diamond Shamrock Facility

The Diamond Shamrock facility is adjacent to the Site on the west side of the property, covering most of the western property line. The Randolph Products facility is between the Diamond Shamrock facility and the Site to the north. The Diamond Shamrock facility has been owned by Defendant Henkel Corporation ("Henkel") since 1987, and is currently going through the ECRA process. The Diamond Shamrock facility is connected to Berry's Creek through Never-Touch Creek, which forms the southern border of the Site and which serves as an influent for water from Berry's Creek to the Diamond Shamrock facility. An unnamed tributary of Berry's Creek running between the upland and lowland areas of the Site carries the effluent from the Diamond Shamrock facility across the Site to Berry's Creek.

Defendants Diamond Shamrock Chemicals Co./Occidental Chemical Corporation and/or their predecessors (hereinafter "Diamond") engaged in chemical manufacturing at the Diamond Shamrock facility since at least 1921. Recently, the facility has engaged in several processes involving the use of sulfur compounds, naphthalene, zinc, and other organics and organometallics. During World War II, the facility was used for metal reclamation. The Waste Disposal Site Directory for New Jersey indicates that approximately 335,000 tons of chemical process waste were disposed of at the Diamond Shamrock facility. [Directory at p. 213] This waste included metals, organics, and inorganics. Disposal methods included landfills, pits, ponds,

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and lagoons. PCBs have been detected in soils and in the sediment of the production pond at the Diamond Shamrock facility with levels up to 120 ppm. See Phase I Site Assessment prepared by IT, dated October, 1988. Polynuclear aromatics ("PNAs") and monochlorobenzene also were used in the chemical processes and are present at the Diamond Shamrock facility. Chromium is a major contaminant, either because of its use in processing or due to the use of chromium ore fill. Zinc is also a major contaminant, with levels as high as 66,000 ppm (or 6.6%). See IT Certificate of Analysis dated December 15, 1989.

For many years, Diamond discharged waste products across and onto the Site. Documents from 1962 memorialize the fact that Diamond was directly disposing of its sludge on the Site. Lagoons on Diamond's property discharged their contents into unlined ditches that ran across the Site and discharged into Berry's Creek. These disposal activities occurred from the beginning of manufacturing operations at the Diamond Shamrock facility.

Aerial photos of the Diamond Shamrock facility from the 1960s show a white material covering large parts of that property and continuing onto the Site. This material was still visible in the 1990s. The material on the Site has been determined to be a zinc compound. Elemental sulfur also is present in large quantities at the Diamond Shamrock facility, and has been visually identified on the Site.

Witnesses have stated that, in the 1940s and 1950s, "foul smelling boiling chemicals of various colors" were discharged to Berry's Creek through the Diamond Shamrock facility effluent. Witnesses have indicated that, at the present time, particularly in hot weather, the discharge creek still smells strongly of naphthalene.

Many of the chemicals used at the Diamond Shamrock facility are found in Berry's Creek and/or on the Site. These include PCBs, zinc, nickel, copper, arsenic, cadmium, chromium, lead, mercury, acetone, xylene, phenol, naphthalene, and 2-butanone. According to a 1977 report prepared by Jack McCormick and Associates for the New Jersey Department of Environmental Protection ("DEP"), the highest concentrations of several of the contaminants on the Site have been found along the Diamond Shamrock facility's effluent stream and in the portion of the property to the south of that stream. Samples of Berry's Creek sediments also show that PNAs, arsenic, barium, and zinc, among other contaminants, are at their highest levels near the Diamond Shamrock facility effluent.

Sediment sampling undertaken in 1989 by Henkel's contractor, IT Corp., showed concentrations of mercury between the Diamond Shamrock facility's influent and effluent streams increasing from 5.4 to 1,300 ppm, zinc increasing from 380 to 12,000 ppm, and lead from 46 to 260 ppm. Sulfur, cadmium, copper, and nickel also increased significantly. See Stream Sediment Analytical Results prepared by IT, dated April, 1989.

Groundwater at the Diamond Shamrock facility is heavily contaminated, and this groundwater flows from the Diamond Shamrock facility under the Site and ultimately into Berry's Creek. The Diamond Shamrock facility has been cited many times for violations of environmental standards. In fact, an ECRA inspector in 1987 noted "the most outstanding feature of the Diamond facility is the numerous violations, or potential violations, of the New Jersey Water Pollution Control Act." See BEECRA Report of Inspection dated: 4/30/87, 5/1/87, 6/25/87.

2. Randolph Products Facility

The Randolph Products facility is located west of and adjacent to the Site, north of the Diamond Shamrock facility. Defendant Randolph Products Co. ("Randolph") has been engaged in the manufacture of paints and other specialty chemicals at this facility for about 50 years. Randolph uses a large number of chemicals in its manufacturing process, including metallic-based pigments and large amounts of organic solvents. State records indicate that, in earlier years, Randolph used a mercury-based whitening agent in their operations.

Wastes generated at the Randolph Products facility were directly discharged across the Site through a ditch and later a discharge pipe. The discharge from Randolph's plant ran into a settling pond/pit on the Site. This pipe continued to function after the Plant at the Site had been closed and dismantled. In 1973, an inspector for DEP noted that the effluent from the Plant into the pit was basically clean, but the Randolph Products

facility's effluent was not. The inspector also noted that there was an oily residue covering the pit coming from the Randolph Products facility. This pit ultimately overflowed into Berry's Creek.

Rainwater at the Randolph Products facility is discharged through a trough at the rear of the property and runs off onto low-lying adjacent areas of the Site. Rusted drum parts, some containing sludge, have been found in and around the trough. A heavy sheen has also been observed on the water. Photographs show poor drum management in the area and stressed vegetation, discoloration, and other signs of contamination along the Randolph Products facility/Site property line.

In 1980, samples from lagoons on Randolph's property were analyzed and found to contain high quantities of phenol, chromium, 1,2-dichloroethylene, benzene, perchloroethene, toluene, ethylbenzene, methylene chloride, chloroform, TCE, and 1,1-dichloroethylene, all of which have been found on the Site or in the Creek.

An October 4, 1983, inspection of the Randolph Products facility revealed spillage of phenolic resin and zinc chromate and several rusting pails containing returns from customers, along with numerous leaking drums and pails. During a 1986 DEP inspection of the Randolph Products facility, DEP found a leaking underground fuel oil storage tank. DEP issued a citation to Randolph for the leaking tank. The report also noted an oil spill on Randolph's driveway.

IV. Berry's Creek Defendants

As mentioned above, currently-available information indicates that all "Site Defendants" ("Customers," "Adjacent Landowners," Redland, and Magnesium) also are potentially responsible for conditions in Berry's Creek by virtue of discharges from or through the Site to the Creek. The information briefly summarized below establishes the nexus between Defendants and conditions in Berry's Creek.

A. Berry's Creek Sampling Results

Mercury is not the sole or most significant contaminant in Berry's Creek. Studies have shown that polynuclear aromatics, PCBs, volatile organics, and metals other than mercury have been found in the Creek. For example, October, 1990 sampling results showed polynuclear aromatics in the Creek at concentrations of 67,800 ppb, PCBs at 9,200 ppb, cadmium at 102 ppm, chromium at 1,650 ppm, and zinc at 11,900 ppm. All of these are well in excess of action levels, some by a far greater degree than for mercury. In addition, the sampling results show that the presence of mercury in the Creek is more localized than, for example, polynuclear aromatics, PCBs, chromium or zinc.

The 1990 results confirm earlier sampling results. The 1986 studies by the Army Corps of Engineers Waterways Experiment Station ("WES"), obtained results that are close to the 1990 ones, although PCBs were found at up to 55.8 ppm for Aroclor 1248, 40.3 ppm for Aroclor 1254, and 6.92 ppm for Aroclor 1260.

Chromium and zinc also were detected at significantly higher levels in the WES studies.

Due to interactions and/or incompatibility of one or more of the contaminants with treatment methods suited to other contaminants, it is likely that the cost of remediation of the "chemical soup" in the Creek will be increased over the cost of remediating any one contaminant by itself. By way of example, the WES report found that the mercury in Berry's Creek does not significantly bioaccumulate under any conditions, but that other contaminants do. The WES report concluded, therefore, that certain technologies that could work for the remediation of mercury contamination may not be suitable in Berry's Creek because of the presence of PCBs and other metals that would be rendered bioavailable to aquatic organisms during treatment. This conclusion was confirmed by the November 1989 Risk Assessment prepared for the UOP site by ENSR. The Risk Assessment reveals that PCBs and chromium contamination in fish in the region are of much greater proportion than mercury. In addition, the contamination of Berry's Creek with manganese and sulfur may be incompatible with some chemical and biological treatment technologies for other contaminants.

It is, therefore, likely that the ultimate remediation will be substantially affected by contaminants other than mercury. The presence of additional contaminants will add to the cost of the study and eventual remediation, and, because other contaminants may be of greater concern than mercury, both due to

their concentration in relation to toxicity and due to their geographic distribution, mercury may not be the driving force behind any remediation. The reality is that a global study of contaminants throughout the entire watershed may offer the potential for the most efficient and cost effective remediation of all contaminants.

B. SCP Site

The Scientific Chemical Processing, Inc. site ("SCP Site") is a 5.9 acre NPL site in Carlstadt, New Jersey where various types of wastes were accepted for recovery or disposal. At the time the facility was shut down in October of 1980, over 300,000 gallons of waste were stored on-site.

The SCP Site is severely contaminated. It is common for concentrations of hazardous substances to be found at the SCP Site in the thousands of parts per million range. For example, in the saturated portion of the fill, total volatile organics ("VOCs") were found as high as 9,890 ppm; base/neutrals were found as high as 3,913 ppm; and total petroleum hydrocarbons ("PHCs") were as high as 29,600 ppm. Additionally, metals and PCBs (Aroclors 1242, 1248, 1254, and 1260) have been detected at high levels throughout the SCP Site.

The SCP Site abuts Peach Island Creek, which is a tributary of Berry's Creek. Surface water and sediment sampling was performed in 1987 by Dames & Moore at four stations along Peach Island Creek: at the confluence of Peach Island Creek and Berry's Creek; 100 yards downstream from the SCP Site; adjacent

to the center line of the SCP Site; and 100 yards upstream from the SCP Site. The executive summary of the SCP RI Report prepared by Dames & Moore notes:

Within the Creek sediments, total volatile organic concentrations range from 0.391 mg/kg to 16,241 mg/kg; base/neutral concentrations range from 2.92 mg/kg to 578 mg/kg; acid extractable concentrations range from nondetected to 44.7 mg/kg; PCBs range from nondetected to 770 mg/kg; total cyanides range from 1.2 mg/kg to 205 mg/kg; total phenolics range from 1.1 mg/kg to 315 mg/kg; and total petroleum hydrocarbons range from 1,800 mg/kg to 25,900 mg/kg. Twelve metals were also detected. The contributions of tidal influence and off-site sources, if any, to sediment and chemical distribution was not investigated as part of this Remedial Investigation.

The Dames & Moore test results confirm a relationship between the SCP Site and the contaminants found in Berry's Creek. The relationship is illustrated by looking at the contaminants found in Peach Island Creek and at the confluence of Peach Island and Berry's Creeks. The common contaminants found include PHCs, PCBs, zinc, chromium, and copper. This connection is also supported by the preliminary sampling results obtained and distributed by Morton and Velsicol in November, 1990. Additionally, testing to date shows that hazardous substances found at the SCP Site have been found in Peach Island Creek and in Berry's Creek, including PCBs (Aroclors 1254 and 1248), lead, nickel, arsenic, and cadmium.

In conclusion, the SCP Site has contributed to the existing "chemical soup" of the watershed. There is a hydrologic connection between the SCP Site, Peach Island Creek, and Berry's

Creek, and many of the contaminants found at the SCP Site and in Peach Island Creek also have been found in Berry's Creek.

Currently available information indicates that the following Defendants are or were owners and/or operators of the SCP Site: Inmar Associates, Inc.; Inmar Realty, Inc.; Marvin H. Mahan; Scientific Chemical Processing, Inc.; Scientific Chemical Treatment Company, Inc.; Scientific, Inc.; Sparrow Realty, Inc.; and Transtech Industries, Inc. Currently available information also indicates that at least the following Defendants either sent hazardous substances to the SCP Site for disposal or otherwise arranged for such disposal at the SCP Site: ALCOA; Allied; Armstrong World Industries, Inc.; Ashland Chemical Company; BASF; Cyanamid; Toms River; DuPont; Diamond; Englehard; Exxon; G.E./RCA; Hoffman; Mallory; Marisol, Inc.; Merck; Mobil Oil Corporation; Minnesota Mining and Manufacturing Company (3M); Nepera,, Inc.; New England Laminates Company, Inc.; Occidental; Olin; Randolph; Pfizer; Nuodex; Carbide; and Westinghouse.

C. UOP Site

The Universal Oil Products facility ("UOP Site") is an NPL site located along Berry's Creek, several miles south of the Site. It abuts both Berry's Creek and Ackerman's Creek (a tributary to Berry's Creek). A system of natural and artificial stream channels crosses the property to allow drainage; this system is tidal and flows into Berry's Creek. Groundwater on the property is also tidally-influenced and hydraulically-connected

to Ackerman's Creek. The UOP Site was used for, among other purposes, a recovery facility for solvents and waste chemicals.

The UOP Site was initially developed in 1932 by Trubeck Laboratories, which operated an aroma chemicals laboratory. Solvent recovery and handling of waste chemicals began in 1955. Universal Oil Products Company ("UOP") purchased the facility in 1960 and continued operations until 1979 when operations ceased and the plant was demolished. One undated DEP document indicates that 4.5 million gallons of chemical waste were discharged into two unlined lagoons at the UOP Site. These lagoons were used from 1959 through 1971. Prior to 1959, process wastewater was discharged directly to Berry's Creek tributaries. Reports prepared by UOP's environmental consultants reveal that the lagoons were hydrologically-connected to Ackerman's Creek. In fact, a May 1985 Phase II Investigation attributed chromium contamination in Ackerman's Creek to the wastewater lagoon sludges at the UOP Site. ERT, a consultant to UOP, admitted in a February 27, 1987, letter to DEP that seepage from the lagoons to the streams has occurred over the past 28 years.

The prominent pollutants in the stream channels and Ackerman's Creek are PCBs, chromium, and mercury. The channels of greatest contamination on the UOP Site are those bordering the former wastewater lagoon area. UOP's own consultants have noted that the transport of PCBs both onto and off-site will occur "principally through the movement of sediments in the creek and channel beds." The preliminary sampling results distributed by

Morton and Velsicol in November, 1990 reveal that the highest concentration of Aroclor 1248 anywhere in Berry's Creek was found at the confluence with Ackerman's Creek. According to UOP's draft RI, Aroclor 1248 was the only PCB detected on-site and was found at levels as high as 5,500 ppm.

Many other contaminants also are found at the UOP Site in significant concentrations, including VOCs, chromium, zinc, and manganese. According to preliminary sampling results, these contaminants also are found in the sediments in Berry's Creek at the confluence with Ackerman's Creek. Manganese seems to be a significant metal contaminant in the soil at the UOP Site, and a 1969 Industrial Waste Survey indicates that it was a major raw material used at UOP.

The UOP Site has contributed significantly to the contamination of the aquatic life in the area, particularly fish. The Risk Assessment reveals that PCBs are found in by far the highest concentrations of any contaminant found in large and small fish in Ackerman's Creek and the swamp directly across from the confluence of Ackerman's and Berry's Creeks. Chromium contamination is the second highest indicator chemical found, with mercury being the least contaminant of the three found in the region's fish.

In a February 26, 1988, letter to DEP regarding a conceptual plan for the remediation of Ackerman's Creek, UOP estimates that 17,000 cubic yards of sediment is contaminated. UOP proposed to bury existing stream sediment with material excavated from new

stream channels because "the volume of material is so large, conventional excavation and treatment or disposal scenarios appeared impractical, especially in a wetlands environment where the excavation would present the risk of releases to adjacent waterways." This demonstrates the interdependency of any clean-up effort and emphasizes the need for a global approach in studying and remediating the watershed.

D. Arsynco Facility

The Arsynco facility, where Defendant Arsynco, Inc. manufactures pharmaceutical and specialty organic intermediates, is located south of the Diamond Shamrock facility next to Berry's Creek. Its SARA Title III survey lists the use of organic and metallic compounds, including mercury compounds. The Arsynco facility is on the CERCLIS list and is in the site investigation stage. The facility has been used by Arsynco, BASF, and/or other owners and/or operators for chemical production since 1905. The Arsynco facility is constructed on former swampland, which is drained by Berry's Creek.

A 1984 Preliminary Assessment Report of operations at the Arsynco facility notes that water from Berry's Creek backflows onto the property and washes the contents of ditches and a pond on-site. At least until 1985, storm water runoff channels constructed in the area of the Arsynco facility's manufacturing operations discharged directly to Berry's Creek. In fact, a 1977 DEP memorandum states that repeated chemical spills in this area were allowed to drain unchecked into Berry's Creek. Regulatory

reports from EPA document numerous and repeated instances of poor housekeeping, such as leaking and rusty drums being stored in marshy areas and in areas of standing water. Discolored soil also was noted. At one time, about half the drums on the Arsynco facility showed evidence of leaking or spillage. Documents also indicate at least one instance where there were "very strong organic solvent-type odors" coming from an Arsynco facility sewer into a facility that was discharging into Berry's Creek.

Soil sampling conducted by DEP on February 1, 1989, reveals that the Arsynco facility is contaminated with VOCs (xylenes as high as 8,100 ppm; ethylbenzene 1,150 ppm); metals (chromium 228 ppm; lead 520 ppm; zinc 369 ppm); and PCBs (Aroclor 1248, 100 ppm, Aroclor 1260, 85 ppm). Sediment sampling taken from the portion of Berry's Creek running adjacent to the Arsynco facility also disclosed contamination by ethylbenzene (as high as 1,790 ppm), xylenes (14,200 ppm), chromium (383 ppm) and PCPs. In addition, methylaziridine (a compound apparently unique to the Arsynco facility in the area) also has been detected in Berry's Creek.

E. Cosan Facility

The Cosan facility is located to the southwest of the Site, to the south of the Diamond Shamrock facility, and adjacent to the Arsynco facility (on the southeast side of the Arsynco facility). It is an ECRA site and is on the CERCLIS list, in the site investigation stage. The plant produces, among other

products, mercury chemicals (mostly organic) for the paints, coatings, and catalysts industries.

Cosan and/or BASF stored elemental mercury at the Cosan facility and converted it into mercury-based chemical intermediates. For a number of years, Cosan and/or BASF purchased both elemental mercury and mercury products from Wood Ridge. See supra section II.A.7.

Run-off from the Cosan facility discharges into Berry's Creek. The plant also discharges cooling water via an NJPDES permit directly to Berry's Creek. The State of New Jersey has fined Cosan \$2.3 million for repeated violations involving the discharge of pollutants, including mercury, into the Bergen County sewage treatment plant and into Berry's Creek.

Cosan's 1987 SARA Title III submission indicates that Cosan uses numerous chemicals in addition to mercury compounds, including a variety of metals, organometallics, and organic chemicals, notably benzene, toluene, xylene, zinc, TCE, and dichlorobenzene.

Sampling of the Cosan facility has detected the following compounds in significant quantities: benzene; chlorobenzene; ethyl benzene; TCE; methylene chloride; bis (2-Chloroethyl) ether; 1,2, 1,3-, and 1,4-dichlorobenzene; cyanide; and phenol. Detected metals include antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc. These metals also have been detected in Berry's Creek. A 1987 inspection report indicates that the waste storage area was not diked, so there was

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no means of preventing runoff from occurring. Corroded and leaking drums, many containing mercury waste, were seen, and the inspector noted that "drum management at the facility was poor." At a follow-up inspection, all but one of the many violations still existed.

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